Attorney Docket No.: 2002B140/2

ABSTRACT

Multiple Catalyst System for Olefin Polymerization and Polymers Produced Therefrom

	This	invention relates to a polymer comprising of one or more C3 to C40 olefins,
optic	nally o	ne or more diolefins, and less than 15 mole % of ethylene, and polymerization
proc	esses fo	r producing the same. where the polymer has:
	a)	a Dot T-Peel of 1 Newton or more; and
	<u>b)</u>	a branching index (g') of 0.95 or less measured at the Mz of the polymer;
	c)	an Mw of 100,000 or less.
		This invention also relates a polymer comprising one or more C3 to C40 olefins
wher	e the po	olymer has:
	- a)	a Dot T-Peel of 1 Newton or more on Kraft paper;
	b) —	a branching index (g') of 0.95 or less measured at the Mz of the polymer;
	c)	a Mw of 10,000 to 100,000; and
	d) —	—a heat of fusion of 1 to 70 J/g.
	This	invention also relates a polymer comprising one or more C3 to C40 olefins
wher	e the po	olymer-has:
	a)	a Dot T-Peel of 1 Newton or more on Kraft-paper;
	b)	a branching index (g') of 0.98 or less measured at the Mz of the polymer;
	c)	a Mw of 10,000 to 60,000;
d) —	a hea	at of fusion of 1 to 50 J/g.
	—This	invention also relates to a homopolypropylene or a copolymer of propylene and
up t o	5 mole	2% ethylene having:
	3)	an isotactic run length of 1 to 30 (isotactic run length "IRL" is defined to be
		the percent of mmmm pentad divided by 0.5 x percent of mmmr pentad) as
		determined by Carbon 13 NMR, preferably 3 to 25, more preferably 4 to 20,

Attorney Docket No.: 2002B140/2

	a percent of r dyad of greater than 20%, preferably from 20 to 70 % as
	determined by Carbon 13 NMR, and
c)	a heat of fusion of 70 J/g or less, preferably 60 J/g or less, more preferably
	between 1 and 55 J/g, more preferably between 4 and 50 J/g.
This	invention further relates to a process to produce an olefin polymer comprising:
1)	selecting a first catalyst component capable of producing a polymer having an
	Mw of 100,000 or less and a crystallinity of 5% or less at selected
	polymerization conditions;
2)	selecting a second catalyst component capable of producing polymer having
	an Mw of 100,000 or less and a crystallinity of 20% or more at the selected
	polymerization conditions;
3)	contacting the catalyst components in the presence of one or more activators
	with one or more C3 to C40 elefins, at the selected polymerization conditions
	in a reaction zone;
4)	obtaining the polymer.
This	invention further relates to a continuous process to produce a branched olefin
polymer con	nprising:
1)	selecting a first catalyst component capable of producing a polymer having an

	Mw of 100,000 or less and a crystallinity of 5% or less under selected
2)	Mw of 100,000 or less and a crystallinity of 5% or less under selected
2)	Mw of 100,000 or less and a crystallinity of 5% or less under selected polymerization conditions;
2)	Mw of 100,000 or less and a crystallinity of 5% or less under selected polymerization conditions; selecting a second catalyst component capable of producing polymer having
2)	Mw of 100,000 or less and a crystallinity of 5% or less under selected polymerization conditions; selecting a second catalyst component capable of producing polymer having an Mw of 100,000 or less and a crystallinity of 20% or more at the selected
-,	Mw of 100,000 or less and a crystallinity of 5% or less under selected polymerization conditions; selecting a second catalyst component capable of producing polymer having an Mw of 100,000 or less and a crystallinity of 20% or more at the selected polymerization conditions;
-,	Mw of 100,000 or less and a crystallinity of 5% or less under selected polymerization conditions; selecting a second catalyst component capable of producing polymer having an Mw of 100,000 or less and a crystallinity of 20% or more at the selected polymerization conditions; contacting the catalyst components in the presence of one or more activators
-,	Mw of 100,000 or less and a crystallinity of 5% or less under selected polymerization conditions; selecting a second catalyst component capable of producing polymer having an Mw of 100,000 or less and a crystallinity of 20% or more at the selected polymerization conditions; contacting the catalyst components in the presence of one or more activators with one or more C3 to C40 elefins, and, optionally one or more diolefins;
3)	Mw of 100,000 or less and a crystallinity of 5% or less under selected polymerization conditions; selecting a second catalyst component capable of producing polymer having an Mw of 100,000 or less and a crystallinity of 20% or more at the selected polymerization conditions; contacting the catalyst components in the presence of one or more activators with one or more C3 to C40 olefins, and, optionally one or more diolefins; at a temperature of greater than 100°C;
3) 4) 5)	Mw of 100,000 or less and a crystallinity of 5% or less under selected polymerization conditions; selecting a second catalyst component capable of producing polymer having an Mw of 100,000 or less and a crystallinity of 20% or more at the selected polymerization conditions; contacting the catalyst components in the presence of one or more activators with one or more C3 to C40 elefins, and, optionally one or more dielefins; at a temperature of greater than 100°C; at a residence time of 120 minutes or less;
3) 4) 5)	Mw of 100,000 or less and a crystallinity of 5% or less under selected polymerization conditions; selecting a second catalyst component capable of producing polymer having an Mw of 100,000 or less and a crystallinity of 20% or more at the selected polymerization conditions; contacting the catalyst components in the presence of one or more activators with one or more C3 to C40 olefins, and, optionally one or more diolefins; at a temperature of greater than 100°C; at a residence time of 120 minutes or less; wherein the ratio of the first catalyst to the second catalyst is from 1:1 to 50:1;

Attorney Docket No.: 2002B140/2

Applicants have amended the Abstract to comply with U.S. practice. Thus, no new matter has been added.

Applicants invite the Examiner to telephone the undersigned attorney if there are any issues outstanding which have not been presented to the Examiner's satisfaction.

Respectfully submitted,

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